

REMARKS

Applicants respectfully request that the above application be reconsidered, as amended. Claims 1-25 are currently pending.

Applicants acknowledge the statement at pages 4-5 of the Office Action that Applicants' prior arguments with respect to Claims 1-25 regarding the rejections based on U.S. Patent Application 2003/0224200 (Bruce) are now moot in view of the new grounds of rejection presented at pages 2-4 of the Office Action.

Claims 5 and 16 have been amended to recite that the optional second metal oxide (yttria, calcia, ceria, scandia, magnesia, india and mixtures) is in an amount of about 0.1 mole % or less. Support for this amendment can be found in paragraph [0020] at page 6 of the above application.

Claims 6 and 17 have amended to recite that the second metal oxide comprises mixtures of neodymia and lanthana, mixtures of ytterbia and lanthana, or mixtures of ytterbia, neodymia and lanthana. Support for this amendment can be found in paragraph [0019] at pages 5-6 of the above application.

A typographical error has also been corrected in Claim 23.

A. Response to Rejections of Claims 1-9, 23 and 25 under 35 USC 102(a) as Anticipated by, or Alternatively under 35 USC 103(a) as Unpatentable over, Zhu et al.

At pages 2-3 of the Office Action, Claims 1-9, 23 and 25 have been rejected under 35 USC 102(e) as anticipated by U.S. Patent 6,812,176 (Zhu et al.). Alternatively, at pages 3-4 of the Office Action, Claims 1-9, 23 and 25 have been rejected under 35 USC 103(a) as unpatentable over Zhu et al.

Zhu et al. discloses thermal barrier coating (TBC) compositions comprising a base oxide (zirconia and/or hafnia), a primary stabilizing oxide (yttria, dysprosia, erbia or combinations thereof), and a pair of Group A (preferably scandia and/or ytterbia) and Group B (preferably neodymia or gadolinia) dopant defect cluster-promoting oxides. See abstract and col. 1, line 66 through col. 2. line 11.

These rejections based on Zhu et al. alone are respectfully traversed with respect to Claims 1-9, 23 and 25, as currently presented or as amended. The composition, article and

method defined by these Claims are distinguishable, as well as unobvious, over Zhu et al. for at least one reason, namely the particular crystalline phase that the zirconia/thermal barrier coating is stabilized in, or is capable of being stabilized in, by the stabilizer component. Regarding Claims 1-9 (composition), independent Claim 1 defines the composition as being capable of providing a thermal barrier coating wherein the zirconia is stabilized in the cubic crystalline phase. Regarding Claim 9 (article), Claim 9 defines the thermal barrier coating as being stabilized in the cubic crystalline phase. Regarding Claims 23 and 25 (method), independent Claim 23 defines the method as forming a thermal barrier coating such that the zirconia is stabilized in the cubic crystalline phase.

The Office Action fails to address where Zhu et al. teaches a thermal barrier coating composition comprising zirconia that is stabilized in, or capable of the being stabilized in, the cubic crystalline phase. Indeed, Zhu et al. never says what crystalline phase its compositions comprising zirconia are stabilized in, or are capable of being stabilized in. Accordingly, the composition, article and method of Claims 1-9, 23 and 25 are novel and unobvious over Zhu et al for this reason alone.

Claim 5, as amended, is distinguishable over Zhu et al. for an additional reason. Claim 5 now defines the optional second metal oxide (yttria, calcia, ceria, scandia, magnesia, india or mixtures) as being present in an amount of about 0.1 mole % or less. By contrast, Zhu et al. teaches that yttria (as the primary stabilizer) is in an amount of at least 2 mole %, while scandia is taught as being in an amount of at least 0.5 mole %. See Table in column 2. In addition, Zhu et al. does not teach or suggest any amount or level for including the other claimed optional second metal oxides, namely ceria, calcia, magnesia or india. Accordingly, Claim 5, as amended, is novel and unobvious over Zhu et al. for this additional reason.

Claims 6-8, as amended, are also distinguishable over Zhu et al. for an additional reason. As amended, Claim 6 recites that the first metal oxide is a mixture of lanthana with either: (1) neodymia; (2) ytterbia; or (3) neodymia and ytterbia. By contrast, Zhu et al does not specifically disclose or suggest the inclusion of lanthana in its thermal barrier coating compositions, alone or in combination with neodymia and/or ytterbia. Accordingly, Claims 6-8, as amended, are novel and unobvious over Zhu et al. for this additional reason.

For at least the foregoing reasons, Claims 1-9, 23, and 25, as is or as amended, are

novel and unobvious over Zhu et al.

B. Response to Rejection of Claims 10-22 and 24 under 35 USC 103(a) as Unpatentable over Zhu et al, in view of Rickerby et al.

At page 4 of the Office Action, Claims 10-22 and 24 have been rejected under 35 USC 103(a) as unpatentable over Zhu et al., in view of U.S. Patent 6,025,078 (Rickerby et al.). The Office Action appears to rely on Rickerby et al. to further teach metal substrates and multiple types of bond coatings that may be used to improve the adhesion of the zirconia coating to the underlying substrates.

The rejection based on Zhu et al., in view of Rickerby et al., is respectfully traversed with respect to Claims 10-22 and 24, as currently presented or as amended, and for reasons presented above as to why Claims 1-9, 23 and 25 are novel and unobvious over Zhu et al. alone. Like Zhu et al., Rickerby et al. says nothing about the crystalline phase of its zirconia coatings. In particular, Rickerby et al does not teach or suggest a zirconia coating stabilized in the cubic crystalline phase according to Claims 10-22 and 24.

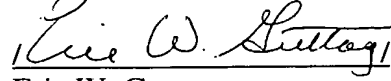
In addition, for reasons presented above as to why Zhu et al. does not teach or suggest amended Claim 5, Zhu et al. and Rickerby et al. combined do not teach or suggest amended Claim 16 wherein the optional second metal oxide (yttria, calcia, ceria, scandia, magnesia, india or mixtures) is now defined as being present in an amount of about 0.1 mole % or less. Also, for reasons presented above as to why Zhu et al. does not teach or suggest amended Claim 6, Zhu et al. and Rickerby et al. combined do not teach or suggest amended Claims 17-19 wherein the first metal oxide is now defined as a mixture of lanthana with either: (1) neodymia; (2) ytterbia; or (3) neodymia and ytterbia.

For at least the foregoing reasons, Claims 10-22 and 24, as is or as amended, are novel and unobvious over Zhu et al., even in view of Rickerby et al.

C. Conclusion

In conclusion, Claims 1-25, as is or as amended, are novel and unobvious over the prior art relied in the Office Action. Accordingly, Applicants respectfully request that Claims 1-25, as is or as amended, be allowed to issue in the above application.

Respectfully submitted,
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A handwritten signature in cursive script, reading "Eric W. Gutttag", written over a horizontal line.

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